

2008 ACCESSORIES & EQUIPMENT

Horns - LaCrosse

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	Specification	
	Metric	English
Horn Bracket Bolt	15 N.m	11 lb ft

SCHEMATIC AND ROUTING DIAGRAMS

HORN SCHEMATICS

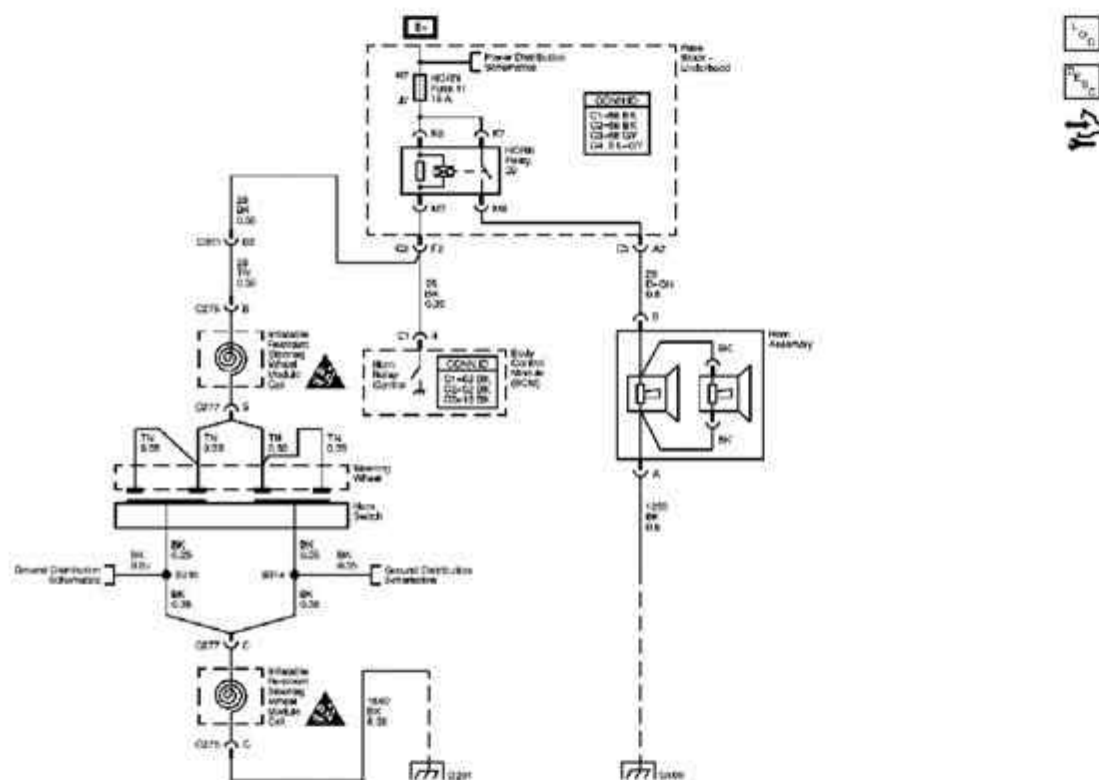


Fig. 1: Horns Schematic

Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B2750	B2750: Horn Relay Coil Circuit

DIAGNOSTIC STARTING POINT - HORNS

Begin the system diagnosis with the **Diagnostic System Check - Vehicle**. The Diagnostic System Check will provide the following information:

- The identification of the control modules which command the system
- The ability of the control modules to communicate through the serial data circuit

- The identification of any stored diagnostic trouble codes (DTCs) and their status

The use of the Diagnostic System Check will identify the correct procedure for diagnosing the system and where the procedure is located.

DTC B2750

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC B2750

Horn Relay Coil Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Horn Relay B+	2	2	-	-
Horn Relay Control	B2750	B2750	B2750	-
Horn Control	2	2	1	-
Horn Switch Ground	-	2	2	-
Horn Ground	-	2	2	-
1. Horn Always On 2. Horn Inoperative				

Circuit/System Description

The body control module (BCM) controls the horn relay by grounding the control circuit of the horn relay coil energizing the relay. When the horn relay is energized, the horn relay contacts close applying voltage through the horn fuse and the horn control circuit to the horns.

Conditions for Running the DTC

When the output is actively being requested by the BCM.

Conditions for Setting the DTC

The BCM detects a short to ground, open, or short to voltage in the horn relay control circuit for approximately 125 milliseconds.

Action Taken When the DTC Sets

The BCM disables the output to the horn relay until the next ignition cycle.

Conditions for Clearing the DTC

- The DTC clears when the fault is no longer detected.
- The current DTC will become history when the request for the output is removed.
- The history DTC will clear after 50 consecutive fault-free ignition cycles have occurred.

Reference Information**Schematic Reference****Horn Schematics****Connector End View Reference****Component Connector End Views****Description and Operation****Horns System Description and Operation****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference**Control Module References** for scan tool information**Circuit/System Verification**

Command the horns ON and OFF with the scan tool. The horns should turn ON and OFF when changing between the commanded states.

Circuit/System Testing

1. Ignition OFF, disconnect the HORN relay.
2. Ignition ON, verify a test lamp illuminates between the B+ circuit terminal K8 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance. If the circuit fuse is open, test the control circuit terminal M8 for a short to ground. If all circuits test normal, test or replace the HORN relay.
3. Connect a test lamp between the control circuit terminal M7 and the B+ circuit terminal K8.
4. Command the horns ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM
5. If all circuits test normal, test or replace the HORN relay.

Component Testing

1. Ignition OFF, disconnect the HORN relay.
2. Test for 60-180 ohms between terminals 85 and 86.
 - If not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 86

- 30 and 87
 - 30 and 85
 - 85 and 87
 - If not the specified value, replace the relay.
4. Install a 30A fused jumper wire between relay terminal 85 and 12 volts. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms between terminals 30 and 87.
- If greater than the specified range, replace the relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup and programming

SYMPTOMS - HORNS

IMPORTANT: The following steps must be completed before using the symptom tables:

1. Perform **Diagnostic System Check - Vehicle** before using the symptom tables in order to verify that all of the following are true:
 - There are no DTCs set.
 - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to **Horns System Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the horn system. Refer to **Checking Aftermarket Accessories**.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Perform the following if a horn buzzes or has a harsh tone:
 - Inspect for debris in the joint where the horn fastens to the vehicle.
 - Test the torque of the horn mounting hardware. The horn mounting hardware should be tightened to a torque of 10 N.m (7 lb ft).

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections**.

Symptom List

Refer to a symptom diagnostic procedure **Horns Malfunction** in order to diagnose the symptom.

HORNS MALFUNCTION

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.

- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Horn Relay B+	2	2	-	-
Horn Relay Control	B2750	B2750	B2750	-
Horn Control	2	2	1	-
Horn Switch Ground	-	2	2	-
Horn Ground	-	2	2	-
1. Horn Always On				
2. Horn Inoperative				

Circuit/System Description

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing the horn switch applies ground through the switch contacts and the horn relay control circuit to the coil side of the relay, energizing the relay. Battery voltage is then applied through the switch side of the relay, the horn fuse, and the horn control circuit to the horns. The body control module (BCM) may also apply ground to the horn relay control circuit as described above. The horns sound as long as ground is applied to the horn relay control circuit.

Diagnostic Aids

If diagnosing a Horn - Poor Tone condition, inspect the following:

- Debris or water in the horn assembly.
- Proper horn mounting hardware torque. Refer to **Fastener Tightening Specifications**.
- Debris in the joint where the horns attach to the vehicle.

Reference Information

Schematic Reference

Horn Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Horns System Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON, press and release the steering wheel horn pad. The horns should sound and emit a clear and even tone only when the horn pad is pressed
 - If the horns do not sound when the horn pad is pressed or continues sounding after the horn pad is released, refer to Horn Switch Circuit Test in **Circuit/System Testing**.
 - If the sound emitted from the horns are not clear and even, refer to Horn - Poor Tone in **Circuit/System Testing**.
2. Command the horns ON and OFF with the scan tool. The horns should turn ON and OFF when changing between the commanded states.
 - If the horns do not turn ON and OFF when changing between the commanded states, refer to Horn Circuit Test in **Circuit/System Testing**.

Circuit/System Testing

Horn Switch Circuit Test

1. Ignition OFF, disconnect the HORN relay.
2. Ignition ON, verify that a test lamp does not illuminate between the output circuit terminal M8 and ground.
 - If the test lamp illuminates, test the output circuit for a short to voltage.
3. Verify that a test lamp illuminates between the B+ circuit terminal K8 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for a short to ground or an open/high resistance. If the circuit tests normal and the B+ circuit fuse is open, test the output circuit terminal M8 for a short to ground. If the circuit tests normal, test or replace the HORN relay.
4. Verify that a test lamp illuminates between the B+ circuit terminal K7 and ground.
 - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance.
5. Ignition OFF, disconnect the harness connector at the horn assembly.
6. Test for less than 1.0 ohm between the horn ground circuit terminal A and ground.
 - If greater than the specified range, test the ground circuit for an open/high resistance.
7. Connect the harness connector at the horn assembly.
8. Ignition ON, connect a 15A fused jumper wire between the B+ circuit terminal K7 and the output circuit terminal M8. Verify the horns are activated.
 - If the horns do not activate, test the output circuit for an open/high resistance. If the circuit tests normal, test or replace the horn assembly.
9. Connect a test lamp between the B+ circuit terminal K8 and the control circuit terminal M7.
10. Press and release the steering wheel horn pad. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, inspect for a sticking horn switch.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, inspect for an open horn switch.
11. If all circuits test normal, test or replace the HORN relay.

Horn - Poor Tone

1. Ignition OFF, disconnect the harness connector at the horn assembly.
2. Test for less than 1.0 ohm between the ground circuit terminal A and ground.

- If greater than the specified range, test the ground circuit for a high resistance.
- 3. Disconnect the X3 harness connector at the underhood fuse block.
- 4. Test for less than 1.0 ohm between the control circuit terminal A2 and the control circuit terminal B at the horn assembly.
 - If greater than the specified range, test the control circuit for a high resistance.
- 5. If all circuits test normal, test or replace the horn assembly.

Horn Circuit Test

1. Ignition OFF, disconnect the HORN relay.
2. Connect a test lamp between the B+ circuit terminal K8 and the control circuit terminal M7.
3. Ignition ON, command the horn ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.

Component Testing

Horn Test

1. Ignition OFF, disconnect the harness connector at the horn assembly.
2. Install a 15A fused jumper wire between the control terminal B and 12 volts. Install a jumper wire between the ground terminal A and ground. Verify the horn emits a clear and even tone.
 - If the sound emitted is not clear and even, replace the horn assembly.

Relay Test

1. Ignition OFF, disconnect the HORN relay.
2. Test for 60-180 ohms between terminals 85 and 86.
 - If not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 86
 - 30 and 87
 - 30 and 85
 - 85 and 87
 - If not the specified value, replace the relay.
4. Install a 30-amp fused jumper wire between relay terminal 85 and 12 volts. Install a jumper wire between relay terminal 86 and ground. Test for less than 2 ohms between terminals 30 and 87.
 - If greater than the specified range, replace the relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Horn Replacement**
- **Control Module References** for BCM replacement, setup, and programming.

REPAIR INSTRUCTIONS

HORN REPLACEMENT

Removal Procedure

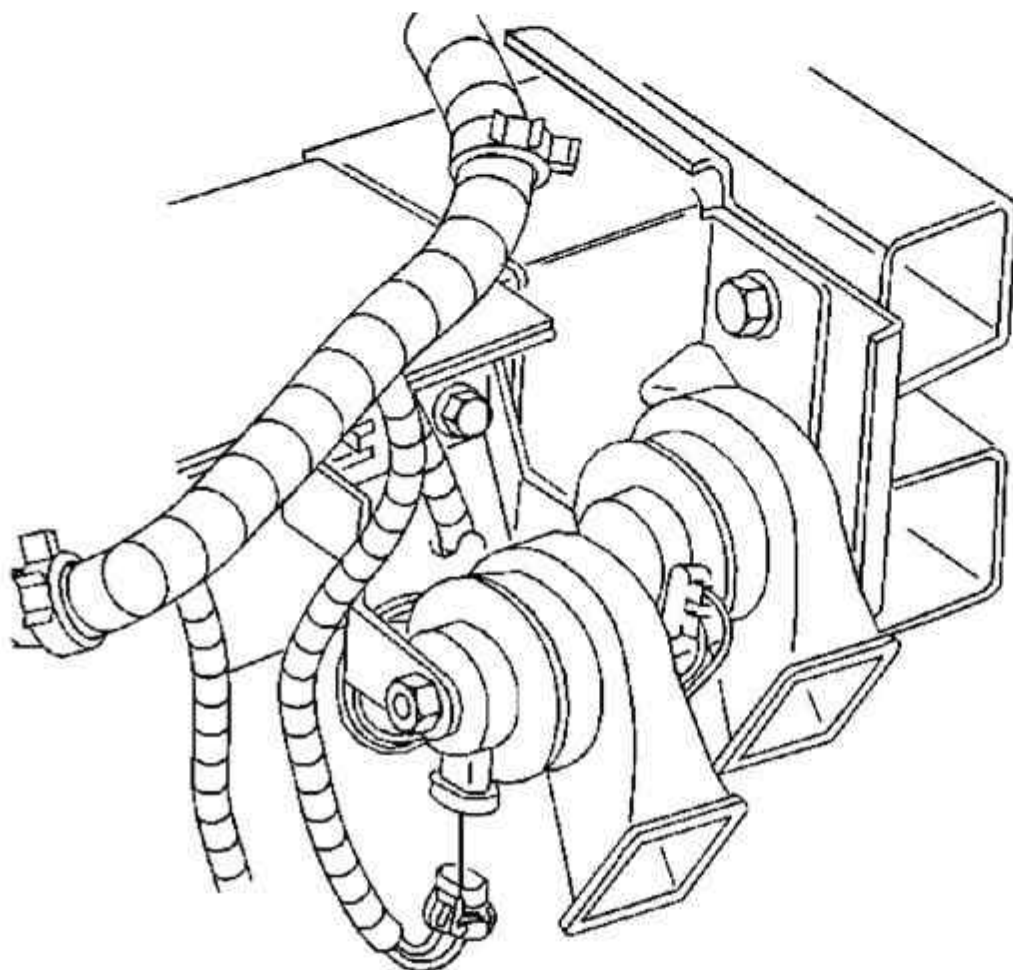


Fig. 2: Identifying Horn Electrical Connector
Courtesy of GENERAL MOTORS CORP.

1. Open the hood.
2. Remove the RH headlamp assembly. Refer to **Headlamp Assembly or Headlamp Bulb Replacement**.
3. Disconnect the horn electrical connector.

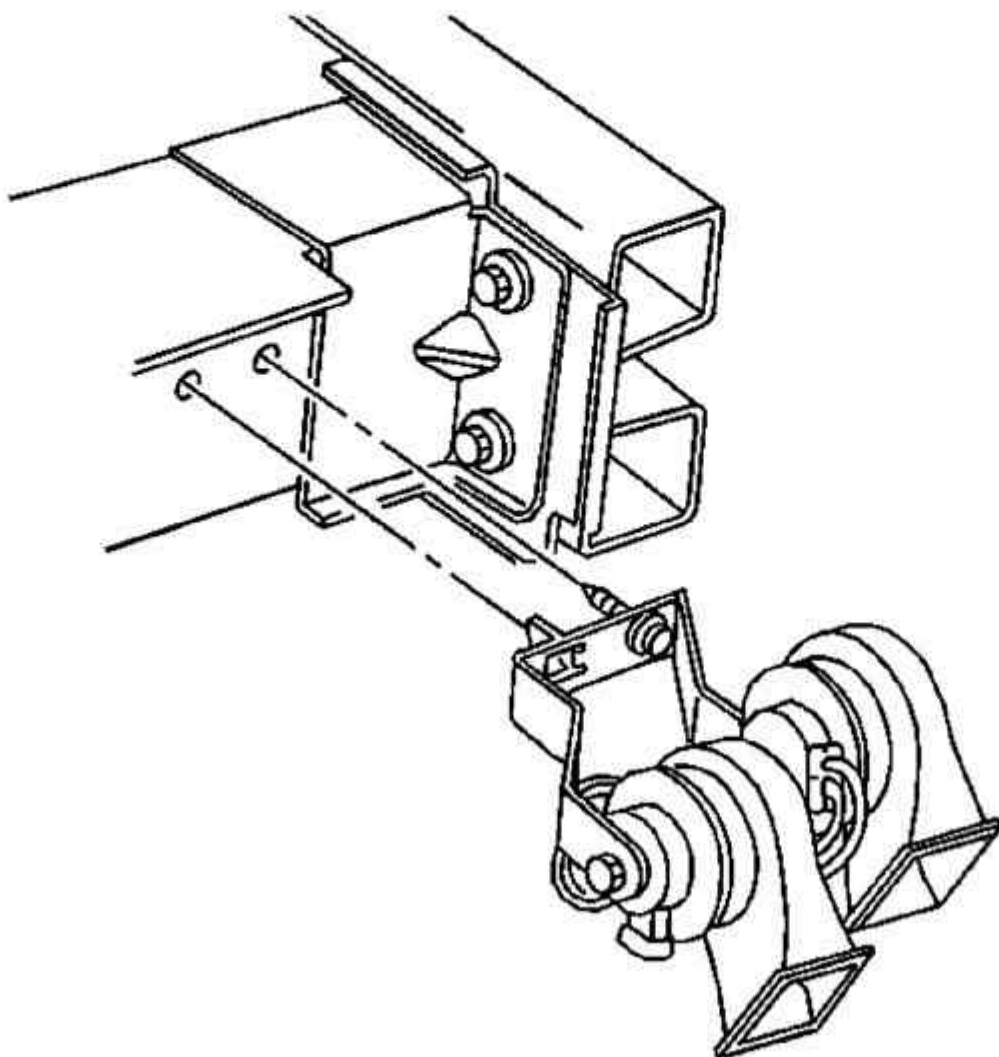


Fig. 3: View Of Horn Bracket & Bolts
Courtesy of GENERAL MOTORS CORP.

4. Remove the horn bracket bolt.
5. Remove the horn from the frame rail extension.

Installation Procedure

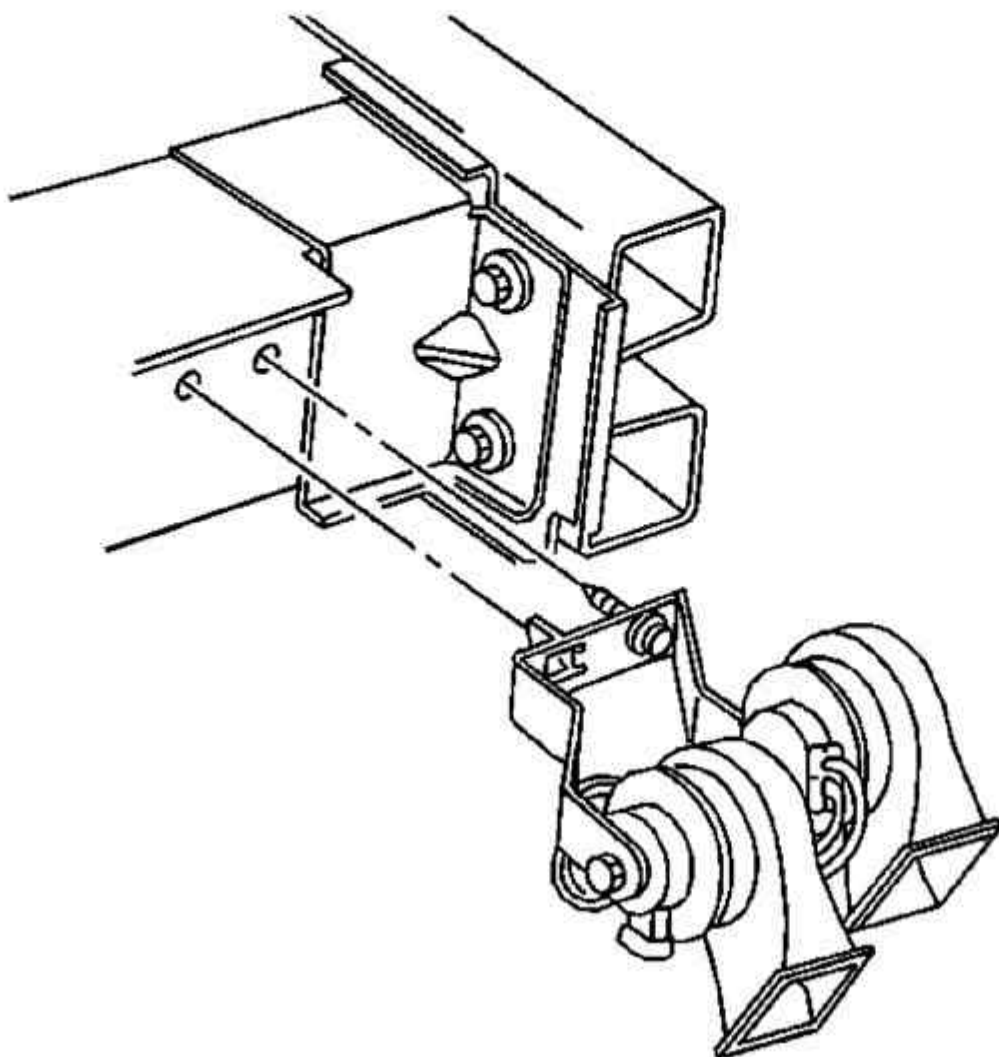


Fig. 4: View Of Horn Bracket & Bolts
Courtesy of GENERAL MOTORS CORP.

1. Position the horn assembly to the frame rail extension. Insert the horn anti-rotation tab into the slot on the frame rail.

NOTE: Refer to FASTENER NOTICE .

2. Install the horn bracket bolt.

Tighten: Tighten the bolt to 15 N.m (11 lb ft).

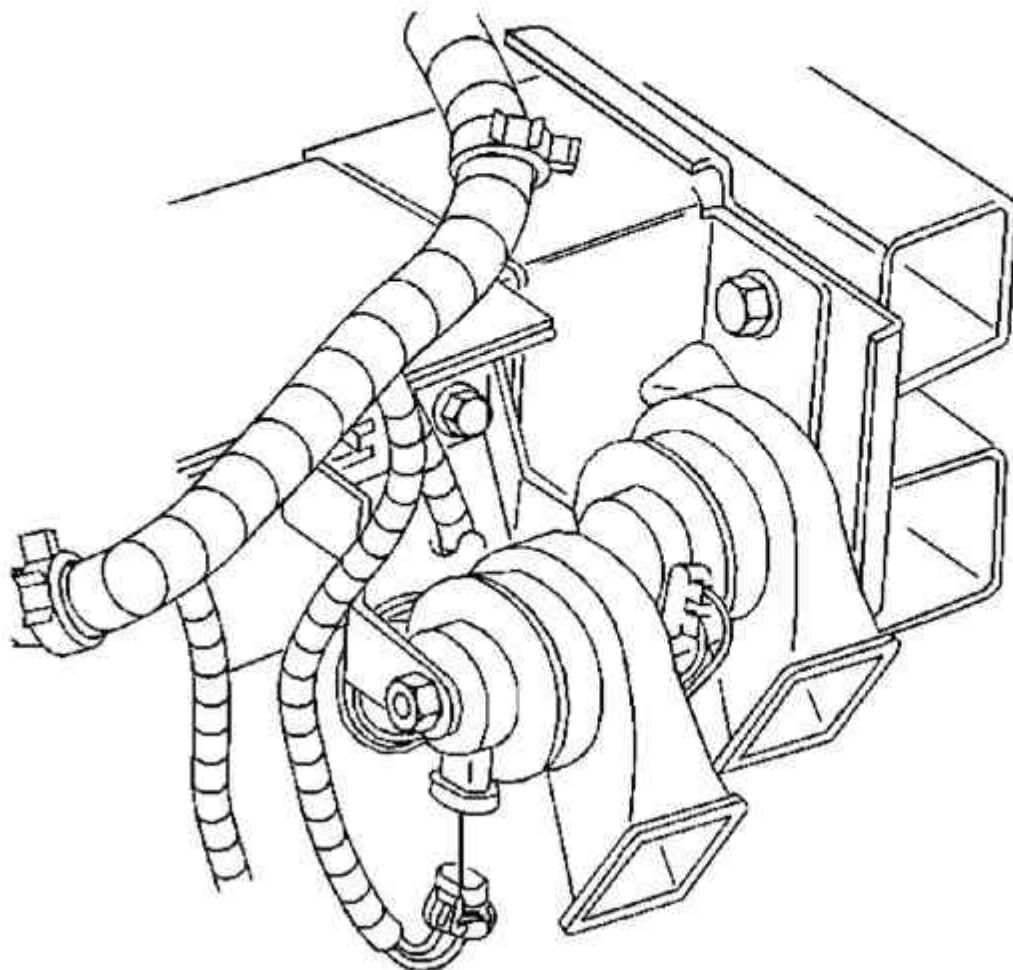


Fig. 5: Identifying Horn Electrical Connector
Courtesy of GENERAL MOTORS CORP.

3. Connect the horn electrical connector.
4. Install the RH headlamp assembly. Refer to **Headlamp Assembly or Headlamp Bulb Replacement**.
5. Close the hood.

DESCRIPTION AND OPERATION

HORNS SYSTEM DESCRIPTION AND OPERATION

System Description

The horn system consists of the following components:

- HORN fuse
- Horn relay
- Horn switch (The horn switch is part of the inflatable restraint steering wheel module.)
- Horn assembly
- Body control module (BCM) system operation

System Operation

- The vehicle horns are activated whenever the horn switch is depressed.

- The BCM commands the horns ON under any of the following conditions:
 - When the panic button is depressed on the remote control door lock transmitter. For further information refer to **Keyless Entry System Description and Operation** .
 - When the content theft deterrent system detects a vehicle intrusion. For further information refer to **Content Theft Deterrent (CTD) Description and Operation** .
 - When the keyless entry system is used to lock the vehicle, a horn chirp may sound to notify the driver that the vehicle has been locked. The notification feature may be enabled or disabled through personalization. For further information refer to **Keyless Entry System Description and Operation** .
 - When the OnStar® system is used to sound the horns if equipped. For further information, refer to **OnStar Description and Operation** .

Circuit Operation

Battery positive voltage is applied at all times to the horn relay coil and the horn relay switch. Pressing the horn switch applies ground to the horn relay control circuit. The BCM may also apply ground to the horn relay control circuit as described above. When the horn relay control circuit is grounded, the horn relay is energized and battery positive voltage is applied to the horns through the horn control circuit. The horns sound as long as ground is applied to the horn relay control circuit.

2008 Buick LaCrosse CXL
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